INCH-POUND
A-A-59773
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COMMERCIAL ITEM DESCRIPTION

VEST, NAVAL FLAK

The General Services Administration has authorized the use of this commercial item description, for all federal agencies.

1. SCOPE. This commercial item description covers the requirement for a Naval Flak Vest (NFV) to be used by U.S. Navy personnel aboard Navy ships to provide the user with fragmentation protection while performing duties above the main deck.

2. CLASSIFICATION.

2.1 Sizes. The naval flak vest shall be manufactured in two sizes: medium and extra large. The measurements for the finished sizes shall be in accordance with Table I.

TABLE I. Measurements for finished vests (inches).

Measurements	Size		Tolerance
	Medium	Extra-Large	
Front Width	15½	17	± ½
Front Length	18	19	± ½
Back Width	21	24½	± ½
Back Length	23¼	24¼	± ½

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: Commander, Naval Sea Systems Command, ATTN: SEA 05Q, 1333 Isaac Hull Avenue, SE, Stop 5160, Washington Navy Yard DC 20376-5160 or emailed to commandstandards@navsea.navy.mil, with the subject line "Document Comment". Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at http://assist.daps.dla.mil/.

3. SALIENT CHARACTERISTICS.

3.1 Design and construction. The naval flak vest shall be comprised of ballistic insert panels enclosed in a flame resistant/water-repellent treated outer shell material. The vest front design shall possess a center front hook and loop closure and a secondary securing flap, also with hook and loop tape. The front shall be secured to the back with side retainer straps. Each side shall have wide elasticized side adjustment webbing, secured by hook and loop tape. The vest shall have a stand-up collar, and shoulder shields held in place by adjustable elastic webbing with snap fasteners. (see Figures 1, 2 and 3)

3.1.1 Vest. All measurements and tolerances are in inches. All measurements shall be taken as follows with the vest laid flat in an open position. The front width measurement shall be taken across front from side seam at base of armhole to front of vest. Each front shall be measured separately. The front length measurement shall be taken from the base of the collar (at neckline) to bottom edge of vest. When measuring, the distance shall be parallel to center front. The back width measurement shall be taken across back from edge to edge at base of armhole. The back length measurement shall be taken along center back from neck edge to bottom of vest.

3.1.2 Vest weight. The total weight of the assembled flak vest including all of its parts shall not be greater than 8.8 pounds for the medium size vest and 10.5 pounds for the extra large size vest.

3.1.3 Outer shell. The outer shell cloth shall be a water repellent treated, meta-aramid, plain weave, 8.5 to 9.5 ounces per square yard when tested in accordance with ASTM D3776. The yarn shall be air textured, 850-denier and the fabric shall have minimum yarns per inch of 39 for the warp and 33 for the filling. The color of the cloth shall be producer colored sage green. The fabric shall have a minimum grab strength of 450 pounds warp and 320 pounds filling when tested in accordance with ASTM D5034 and have a maximum dynamic absorption of 15% (initial and after one laundering) when tested in accordance with AATCC-70 and AATCC-96. The fabric shall exhibit a maximum after-flame of 2 seconds and maximum char length of 6 inches when tested for flammability in accordance with ASTM D6413.

3.1.4 Ballistic insert-panels. The ballistic insert panel cloth for the collar, front, back and shoulder shield areas, shall be multiple plies of a durable water-repellent treated, para-aramid cloth. The cloth shall have a maximum dynamic absorption of 15% (initial and after one laundering) when tested in accordance with AATCC-70 and AATCC-96 and a maximum after-flame of 2 seconds and maximum char length of 6 inches when tested for flammability in accordance with ASTM D6413. The vest panels shall exhibit V_{50} ballistic limits of not less than the limits given in Table II when tested using the following size steel fragments: 4-grain RCC at 0° obliquity, 17-grain FSP at 0° obliquity, 17-grain FSP at 45° obliquity, and 64-grain RCC at 0° obliquity. The ballistic insert panel for the collar shall contain one-half the number of plies required to meet the ballistic performance.

TABLE II. Minimum ballistic resistance limits - V_{50} (ft/sec).

Fragment Size	Minimum Average V_{50}	Allowable Velocity Range	Required Impact
4-grain RCC (0°)	2375	150	5 + 5
17-grain FSP (0°)	1925	150	5 + 5
17-grain FSP (45°)	1950	150	5 + 5
64-grain RCC (0°)	1675	125	4 + 4

3.1.5 Elastic webbing. The elastic webbing for the shoulder shield retainer straps shall be nylon, minimum 1 inch wide, 0.016 to 0.046 inch thick, weighing 0.73 (maximum) ounces per linear yard. The elastic webbing for the side adjustment systems shall be woven nylon or polyester, minimum 4 inches wide, 0.031 to 0.061 inch thick, weighing 5.73 yards per pound. The color of the webbing shall be either black or sage green.

3.1.6 Thread for outer shell. The thread for seaming and stitching the outer shell shall be a meta-aramid spun staple thread. The thread size shall be nominal 70 Tex and 3 plies – final when tested in accordance with ASTM D204. Elongation shall be 20% (maximum), and the break strength shall be 6.0 pounds (minimum) when tested in accordance with ASTM D204.

3.1.7 Thread for ballistic insert panels. The thread for stitching through ballistic insert panels shall be a para-aramid filament. The thread size shall be nominal 400 denier and 3 plies – final when tested in accordance with ASTM D204. The direction of twist shall be singles 8S, ply 4Z, and the break strength shall be 45.0 pounds (minimum) in accordance with ASTM D204.

3.1.8 Hook and loop fastener. Fastener tape for both the front closure and side adjustment systems shall be nylon and black in color. The hook tape shall be 8.0 mil, 300denier. The front closure system shall contain a 2-inch wide by 12-inch long hook tape on the right front, both on the inside and outside. The flap and left front shall contain a 4-inch wide by 12-inch long loop tape. The side adjustment system shall contain a 3-inch by 4-inch hook tape on each side adjustment webbing piece and each front shall contain a 4-inch wide by 6-inch long loop tape.

3.1.9 Fastener snaps. The snap fasteners for the shoulder shield shall be regular wire spring clamp type, black finish ligne 24, finish 2, and hard action. Each shoulder shield-retaining strap shall contain two female components. The front and back of the vest shall contain three male components for adjustment corresponding to the straps.

3.1.10 Nylon tape. The tape for the shoulder shield edge finishing shall be woven nylon tape, minimum ½ inch wide, 0.015 to 0.025 inch thick, and shall weigh 0.15 ounce per linear yard (maximum). The minimum breaking strength shall be 250 pounds in accordance with ASTM D5035. The color shall be black or sage green. The tape for the side closure retainers shall be woven nylon tape, 1½ inches wide, 0.015 to 0.025 inch thick, and shall weigh 0.40 ounce per linear yard (maximum). The minimum breaking strength shall be 850 pounds in accordance with ASTM D5035. The color shall be black or sage green.

3.1.11 Shoulder shield retainer strap webbing. The webbing for the shoulder shield retainer strap reinforcements shall be nylon, ¾ inch wide, 0.025 to 0.035 inch thick, and shall weigh 0.32 ounce per linear yard (maximum). The minimum breaking strength shall be 600 pounds in accordance with ASTM D5035.

3.1.12 Labeling. A label shall be sewn to the inside of the vest indicating the item name, manufacturer, NSN, and Navy certification number.

3.2 Ballistic performance characteristics.

3.2.1 Ballistic resistance performance. The vest shall exhibit ballistic limits of not less than the limits given in Table I when tested using the following size steel fragments:

a. 4-grain RCC (see Figure 4) at 0° obliquity
b. 17-grain FSP (see Figure 5) at 0° obliquity
c. 17-grain FSP (see Figure 5) at 45° obliquity
d. 64-grain RCC (see Figure 4) at 0° obliquity

3.2.2 Ballistic resistance test procedures. The ballistic resistance test procedure shall be conducted in accordance with Ballistic Testing of Personal Armor, NATO/STANAG 2920 for testing of the ballistic cloth assemblies.

3.2.3 Test assemblies. The test assemblies shall be made up of enough layers of 18-inch by 18-inch ballistic insert panel cloth to meet the performance requirements in Table II. Prior to conducting the test, the test assemblies shall be preconditioned in the ballistic area for at least 24 hours with air freely circulating on all sides of the layers.

3.2.4 Projectiles. Three different size projectiles shall be used during testing. The 4-grain and 64-grain projectiles shall conform to Figure 4 of this document. The 17-grain projectile shall be .22-caliber, type 2 conforming to Figure 5 of this document.

3.2.5 Barrel. The barrel shall be .22-caliber, rifled barrel for the 4-grain projectile, .30-caliber for the 17-grain projectile and .46-caliber for the 64-grain projectile. All barrels shall have a one-in-sixteen twist and a length of 28 inches. The barrel shall be chambered to accommodate firing the specified sabot.

3.2.6 Sabot. A sabot will be used in loading and firing the projectiles for the 4-grain, 17-grain and the 64-grain projectiles, respectively.

3.2.7 Pusher plate. The pusher plate of the 4-grain projectile shall have a diameter of 0.22 inch and a thickness of 0.071 inch. The pusher plate for the 17-grain projectile shall have a diameter of 0.304 inch and a thickness of 0.050 inch. The pusher plate for the 64-grain projectile shall have a diameter of 0.508 inch and a thickness of 0.125 inch. The material shall be aluminum.

3.2.8 V_{50} Ballistic limit, BL(P). The V_{50} ballistic limit, BL(P), for impacts on each ballistic cloth test assembly with 4-grain and 17-grain (0° and 45°) projectiles shall be the average of 10 fair impact velocities consisting of the five lowest complete penetration velocities and the five highest partial penetration velocities provided that the spread for the 10 velocities is not greater than the allowable range given in Table II. If the 10-round average cannot be attained within the allowable range, retesting will be required. The V_{50} ballistic limit is determined for each size fragment by averaging the V_{50} results for three test assemblies. The average V_{50} for three assemblies shall meet the minimum value given in Table II. The V_{50} BL(P) for 64-grain impacts on ballistic cloth test assemblies shall be the average of the 8 impact velocities provided that four are partial penetrations and four are complete penetrations, and the spread is not greater than the allowable range given in Table II. If the limit cannot be attained within the allowable range, retesting will be required. The V_{50} ballistic limit is determined by averaging the V_{50} results for three test assemblies. The average V_{50} shall meet the minimum value given in Table II.

3.2.9 Testing laboratories. Commercial laboratories capable of performing the required ballistic testing are: H.P. White Laboratory, Bel Air, MD; Denver Research Institute, Denver, CO; and Gentex Corporation, Carbondale, PA.

4. REGULATORY REQUIREMENTS. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

5. PRODUCT CONFORMANCE. The products provided shall meet the salient characteristics of this commercial item description, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial market. Manufacturer shall show that they have made similar type vests, which meet ballistic, or National Institute of Justice requirements. The government reserves the right to require proof of such conformance.

6. PACKAGING. Preservation, packing, and marking shall be as specified in the contract or order.

7. NOTES.

7.1 Source of documents.

7.1.1 AATCC. AATCC standards are available from the American Association of Textile Chemists and Colorists, PO Box 12215, Research Triangle Park, NC 27709-2215 or online at www.aatcc.org.

7.1.2 ASTM. ASTM standards are available from ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959 or online at www.astm.org.

7.1.3 FAR. The Federal Acquisition Regulation (FAR) may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 or online at http://www.arnet.gov/far.

7.1.4 NATO/STANAG. North Atlantic Treaty Organization standardization agreements are available from NATO, Blvd. Leopold III 1110, Brussels, Belgium or online at www.nato.int/home.htm.

7.2 National stock numbers (NSNs). The following is the NSN that is assigned to this CID. It may not be indicative of all possible NSNs associated with the CID.

NSN	ITEM
8470-01-479-8483	Medium Flak Vest
8470-01-479-8482	Extra Large Flak Vest

7.3 Ordering data. The contract or order should specify the following:

a. CID document number and revision.
b. National stock numbers (NSNs).
c. Product conformance provisions.
d. Packaging requirements.

7.4 Keywords.

Aramid
Ballistic
Ballistic resistance
Body armor
Fragmentation

MILITARY INTERESTS

Custodians:
Army – GL
Navy – SH
Air Force – 11

Review Activities:
Army – GL1, MR
Navy – CG, MC, NU
DLA – CT

CIVIL AGENCY COORDINATING ACTIVITY:
GSA - FSS

Preparing Activity:
Navy – SH
(Project 8470-0189-000)

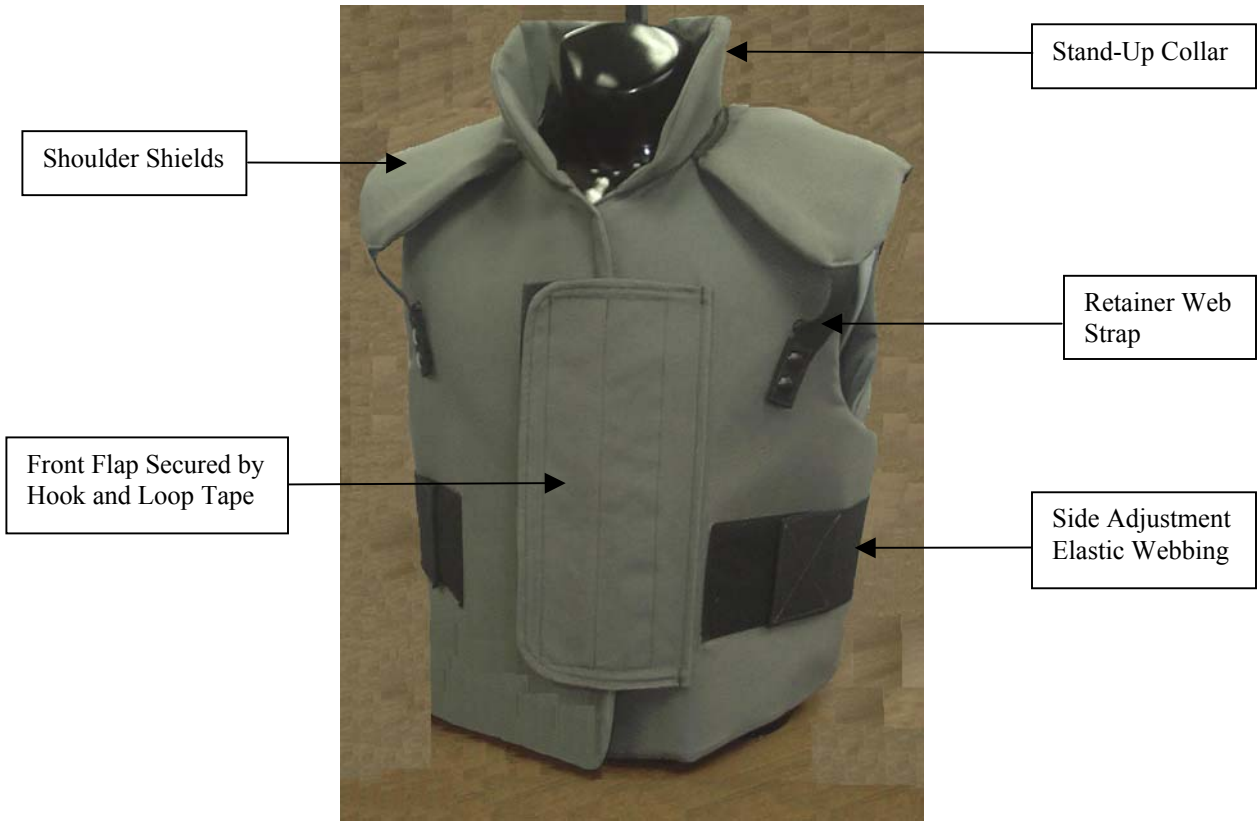
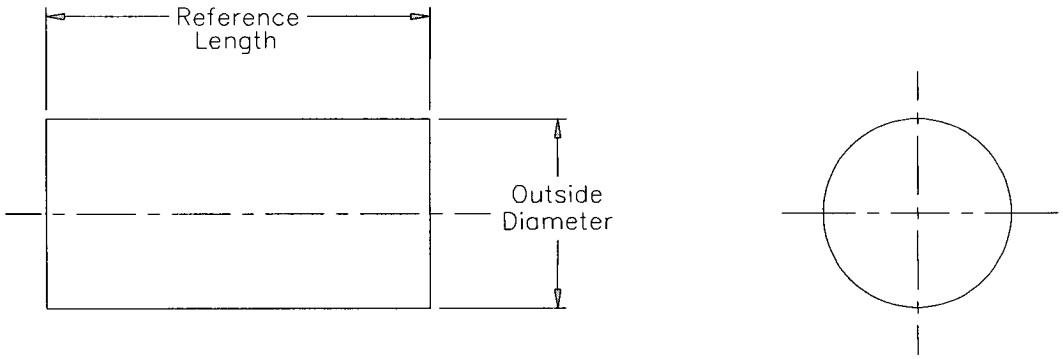


FIGURE 1. Naval flak vest.

FIGURE 2. Naval flak vest front closures.

FIGURE 3. Naval flak vest side closures.

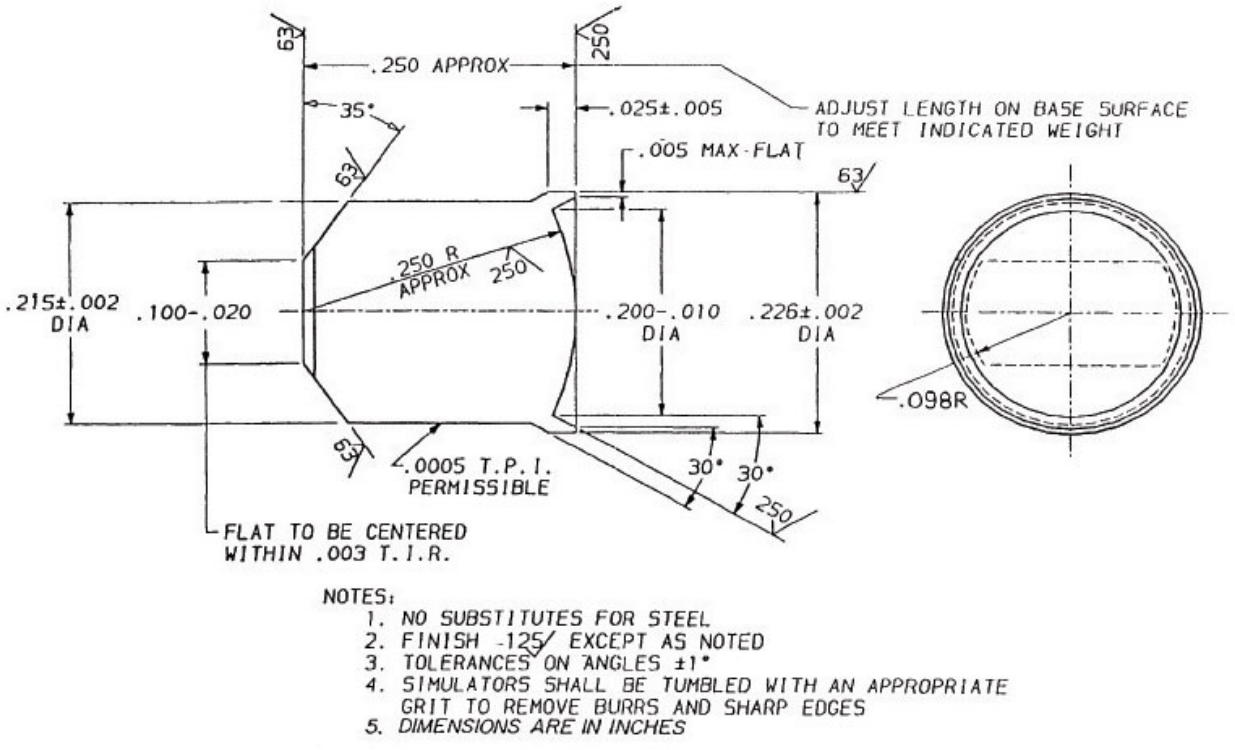


RCC Weight (Grains)	Outside Diameter (O.D.)	Reference Length (Inches)
4 ± 0.15	0.135 $^{+.001}_{-.000}$	0.141
64 ± 1	0.343 ±.001	0.350

FIGURE 4. Fragments, 4- and 64-grain.

Notes:

1. Adjust Reference Length to Meet RCC Weight (Grains)
2. Material is Tool Steel (Oil Hardened Drill Rod), Heat Treated to Obtain Rockwell C Hardness of 29 ± 2.
3. Finish is 32√



NOTES:
1. NO SUBSTITUTES FOR STEEL
2. FINISH 125 EXCEPT AS NOTED
3. TOLERANCES ON ANGLES ±1°
4. SIMULATORS SHALL BE TUMBLED WITH AN APPROPRIATE GRIT TO REMOVE BURRS AND SHARP EDGES
5. DIMENSIONS ARE IN INCHES

FIGURE 5. Fragment 17-grain.